



FX Hedge in Brazil

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Panel 2: Exchange Rate Risk Hedging

- *Are the corporate balance-sheet effects of currency depreciation (financial and non-financial sector) significant and relevant for financial stability?*
- *Are there derivative markets that can provide hedging instruments for corporations and banks?*
- *Have they been used to hedge risks?*
- *Do regulations limit the access to foreign currency financing and balance sheet risks?*
- *What are the resulting policy recommendations?*

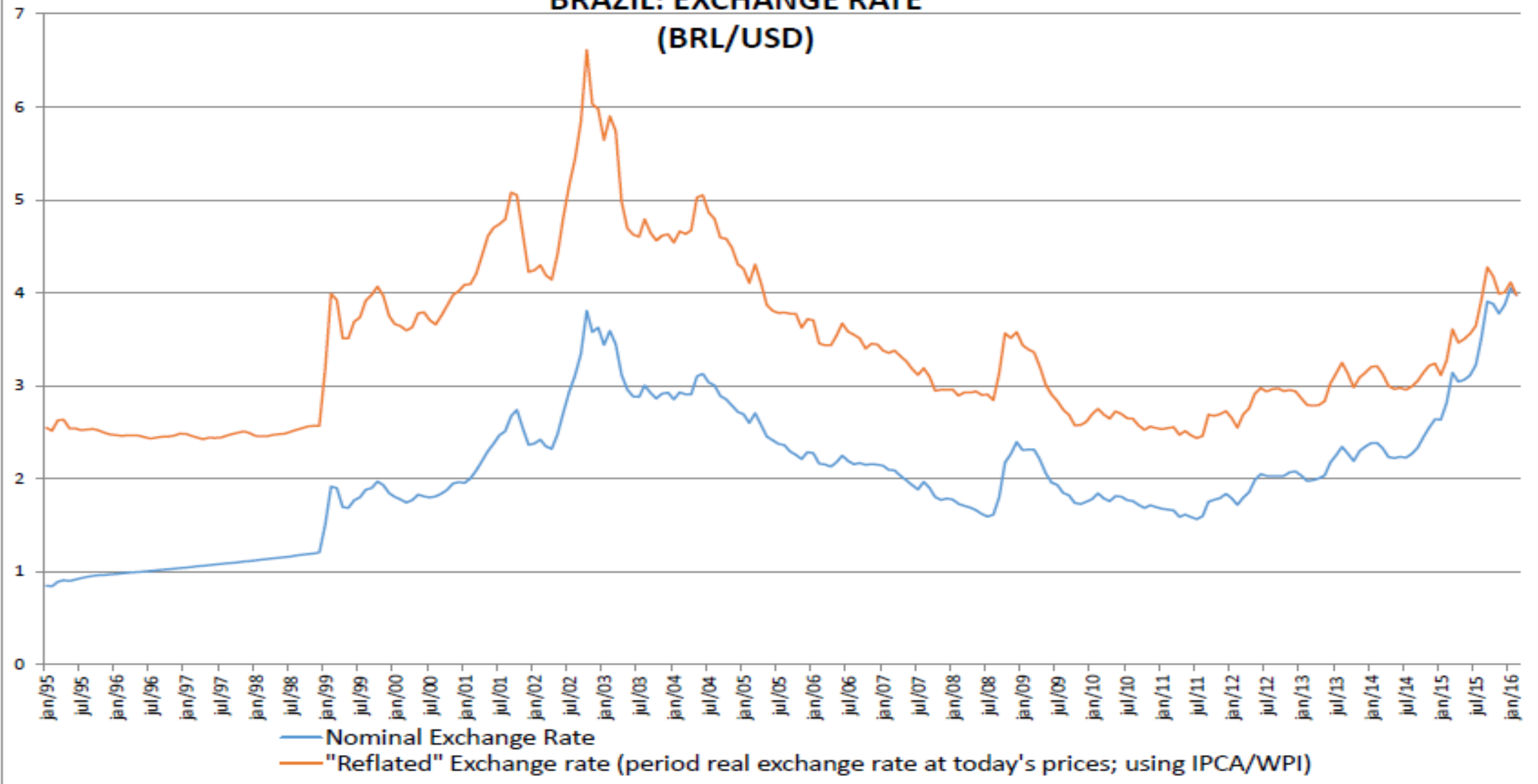
Are the corporate balance-sheet effects of currency depreciation (financial and non-financial sector) significant and relevant for financial stability?

- Recent Currency Crises: 2002 e 2008.
- How were Brazilian firms affected in 2002?
- How fast corporate CFOs forgot about FX risk: the leveraged exotic FX derivatives in 2008.

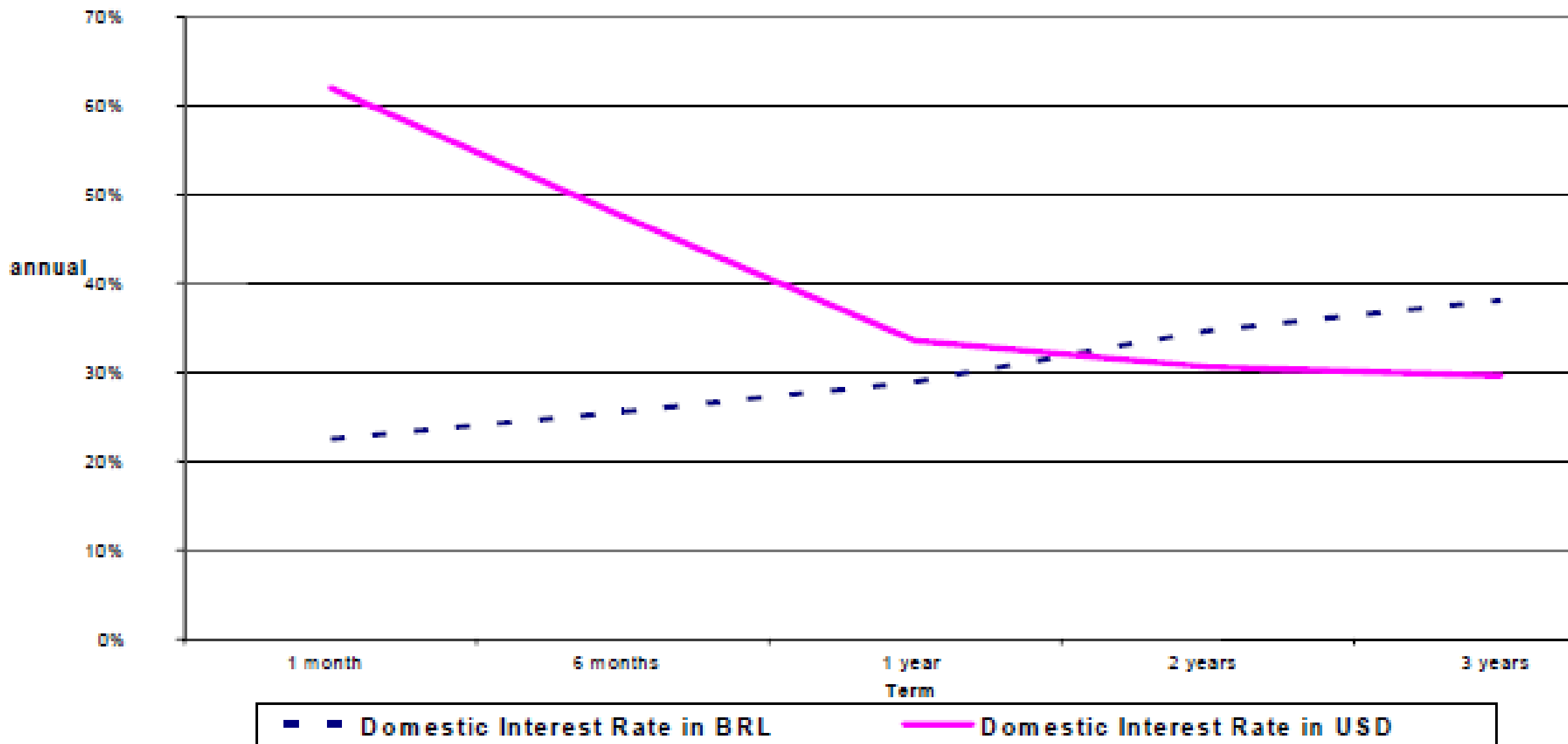
The 2002 FX Crisis in Brazil

- In 2002, a “perfect storm” hit Brazil, provoking significant capital flight and a sudden stop episode (Garcia (2009)).
- The BRL depreciated 53.2% YOY (74.2% from the April low to the October high), one-year interest rates in BRL went over 29.9% and one-month interest rates indexed to the USD skyrocketed to above 60%.
- Foreign Reserves were very low: from 32.8 Bi USD (May) to 41.9 Bi USD (June). The average for the year of 2002 was of 36.7 Bi USD.
- GDP Growth: 2,7% in 2002 and 1,1% in 2003. (New methodology)
1,9% in 2002 and 0,5% in 2003. (Old methodology)
- Janot, Garcia and Novaes (2008) found that between 2001 and 2003, firms with large currency mismatches just before the crisis reduced their investment rates 8.1 percentage points more than other publicly held firms.
- We also showed that the currency depreciation increased exporters’ revenue, but those with currency mismatches reduced investments 12.5 percentage points more than other exporters.
- These estimated reductions in investment are economically very significant, underscoring the importance of negative balance sheet effects in currency crises.

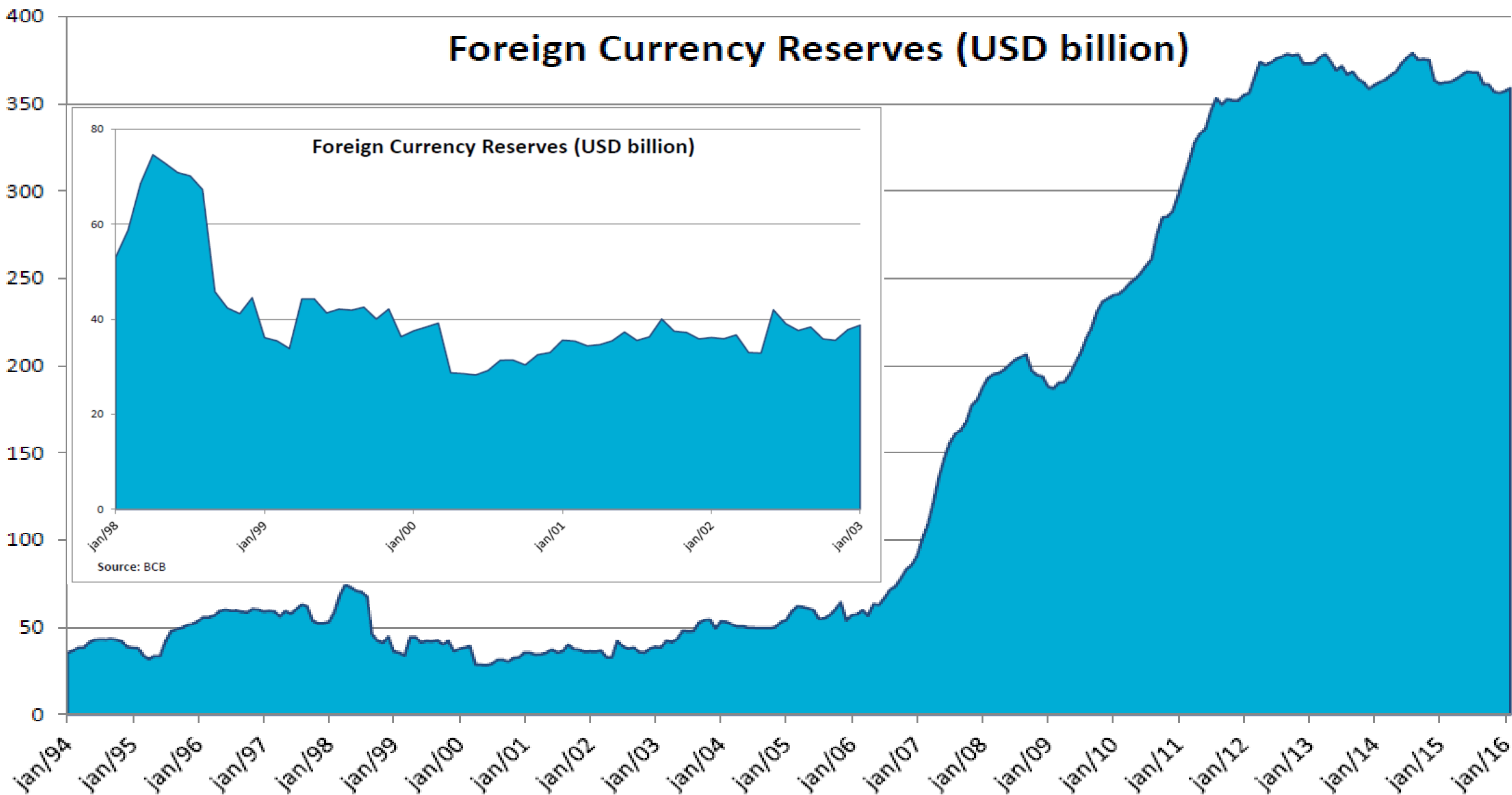
BRAZIL: EXCHANGE RATE (BRL/USD)



BRL and USD Domestic Yield Curves: 10/22/2002



Foreign Currency Reserves (USD billion)



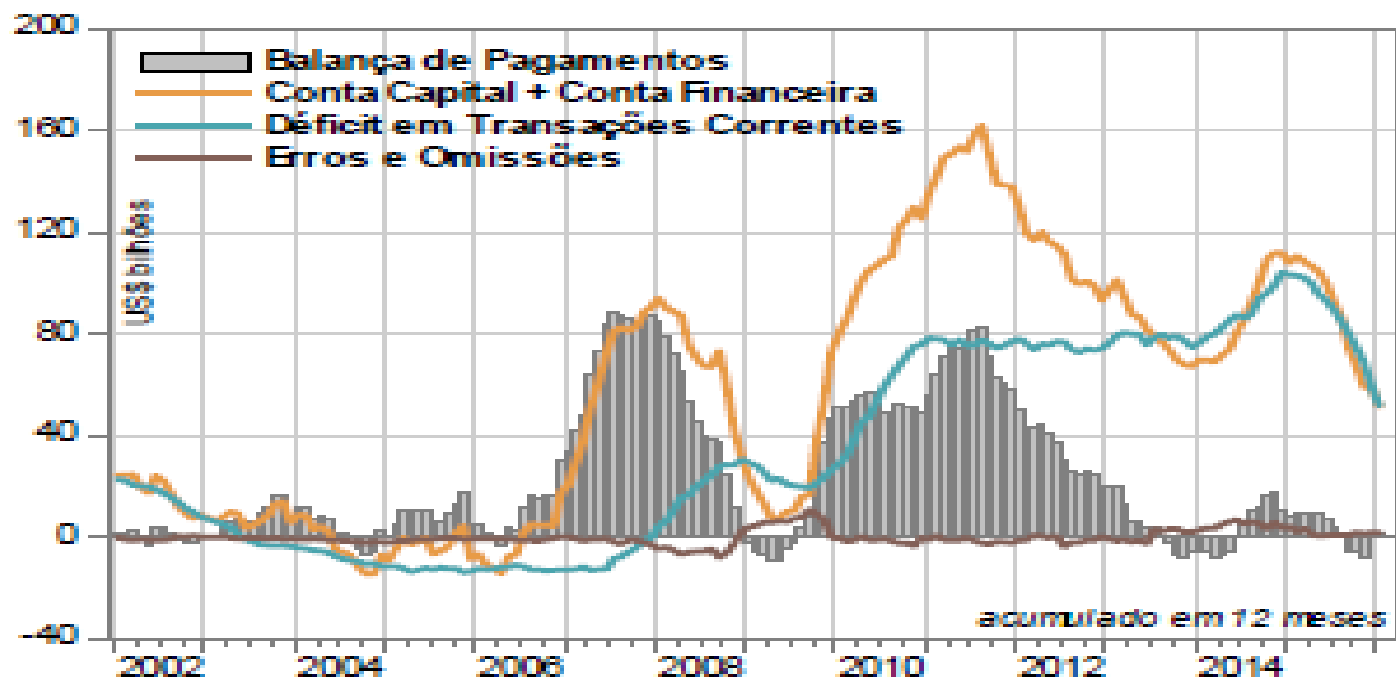
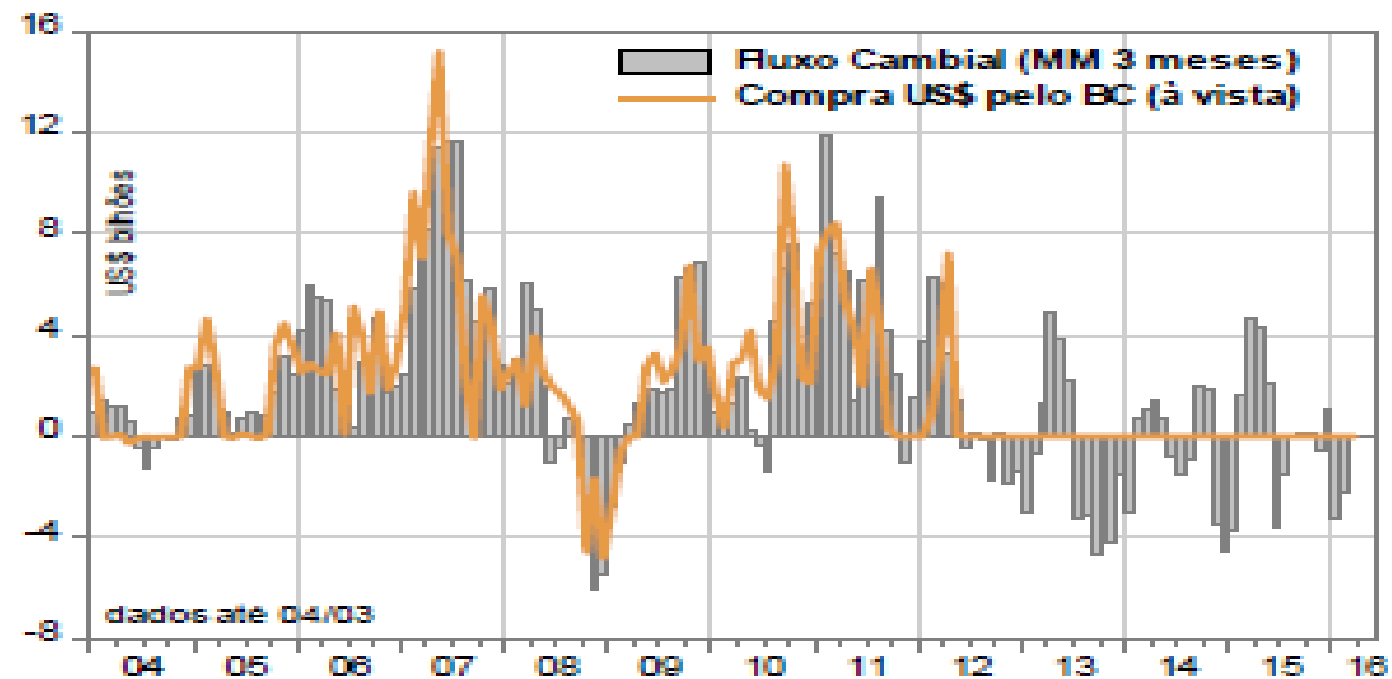
Source: BCB

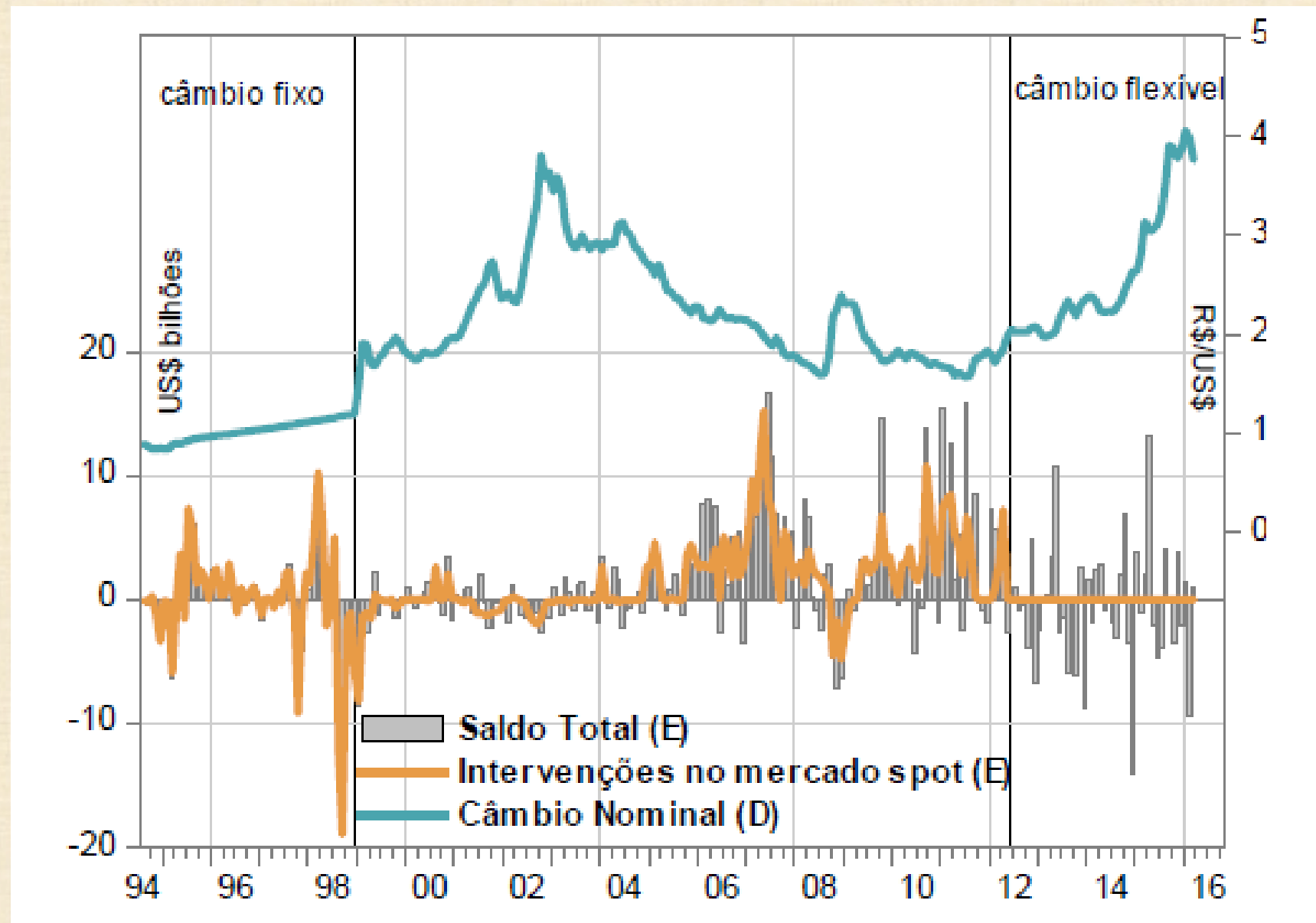
The 2008 FX Crisis in Brazil

- The 2008 GFC affected Brazil intensively, but briefly.
- The BRL depreciated by 31.8% (60% from the August low to the December High), but interest rates did not jump as much as in 2002, but reached 15,3% in October.
- CB provided hedge (During the crisis, the Central Bank sold **US\$ 14.5 billion**, just **7% of the reserves** held at the outbreak of the crisis. **Repos** were enabled (foreign currency sales with future repurchase agreements) for a total of **US\$ 11.8 billion** and **loans** were granted in the **US dollar** for **US\$12.6 billion**, of which US\$ 9 billion was directed at foreign trade. The FED extended individual credit lines that totaled US\$ 30 billion to the central banks of the more solid emerging countries, such as Brazil, in the form of currency swaps. This facility was not used, but its existence contributed to restoring normality to the financial markets. Another action taken by the Central Bank in the currency markets was the **sale of dollar futures** (reverse currency swaps) to the amount of **US\$ 35 billion**.)
- Many large Brazilian firms suffered significant losses because of leveraged exotic derivatives (KIKOs, target forwards) (VERVLOET and GARCIA (2010)).
- Large commodity exporters had to be bailed out by BNDES.
- Quick Chinese recovery allowed Brazil to resume growth in 2010.

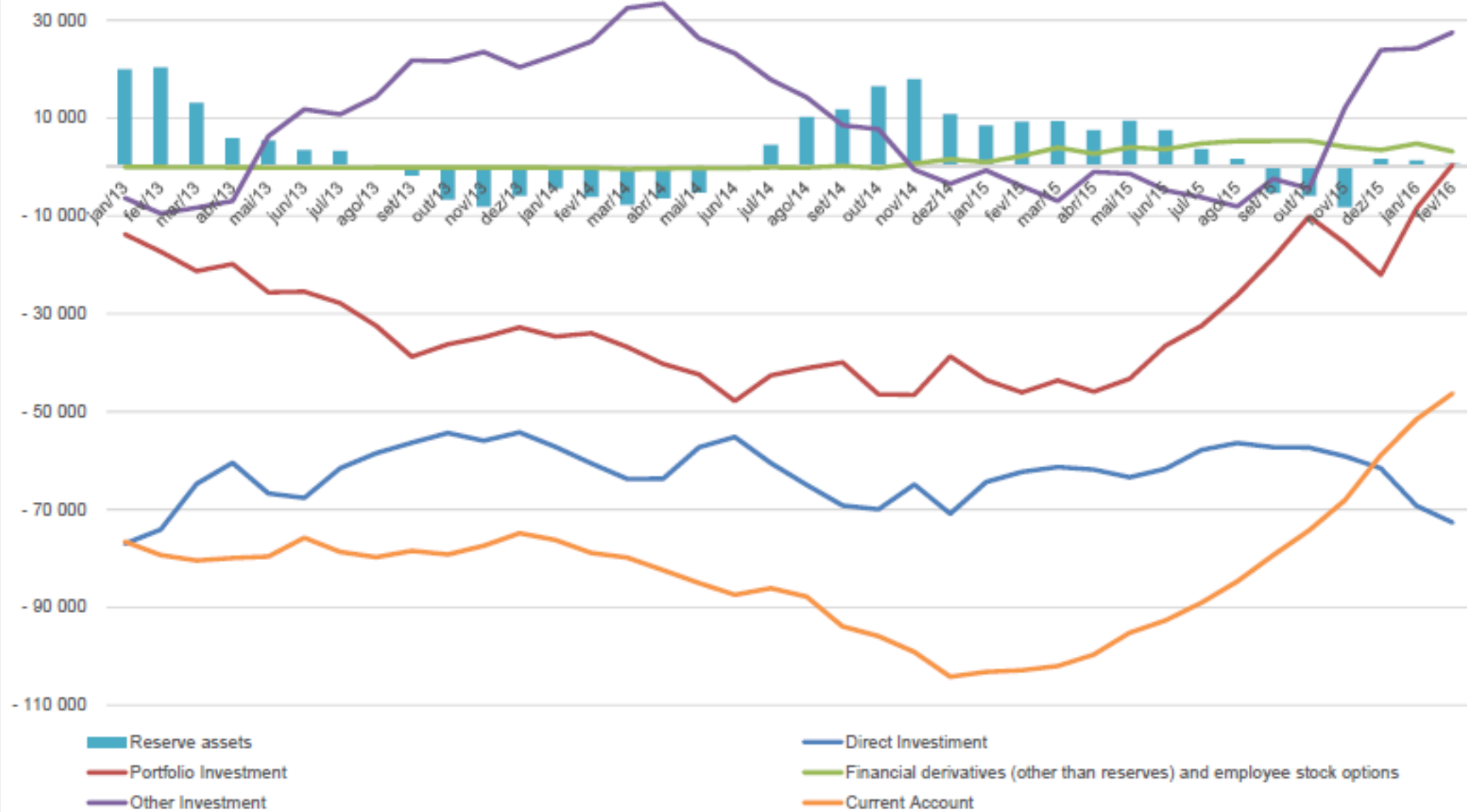
Are there derivative markets that can provide hedging instruments for corporations and banks?

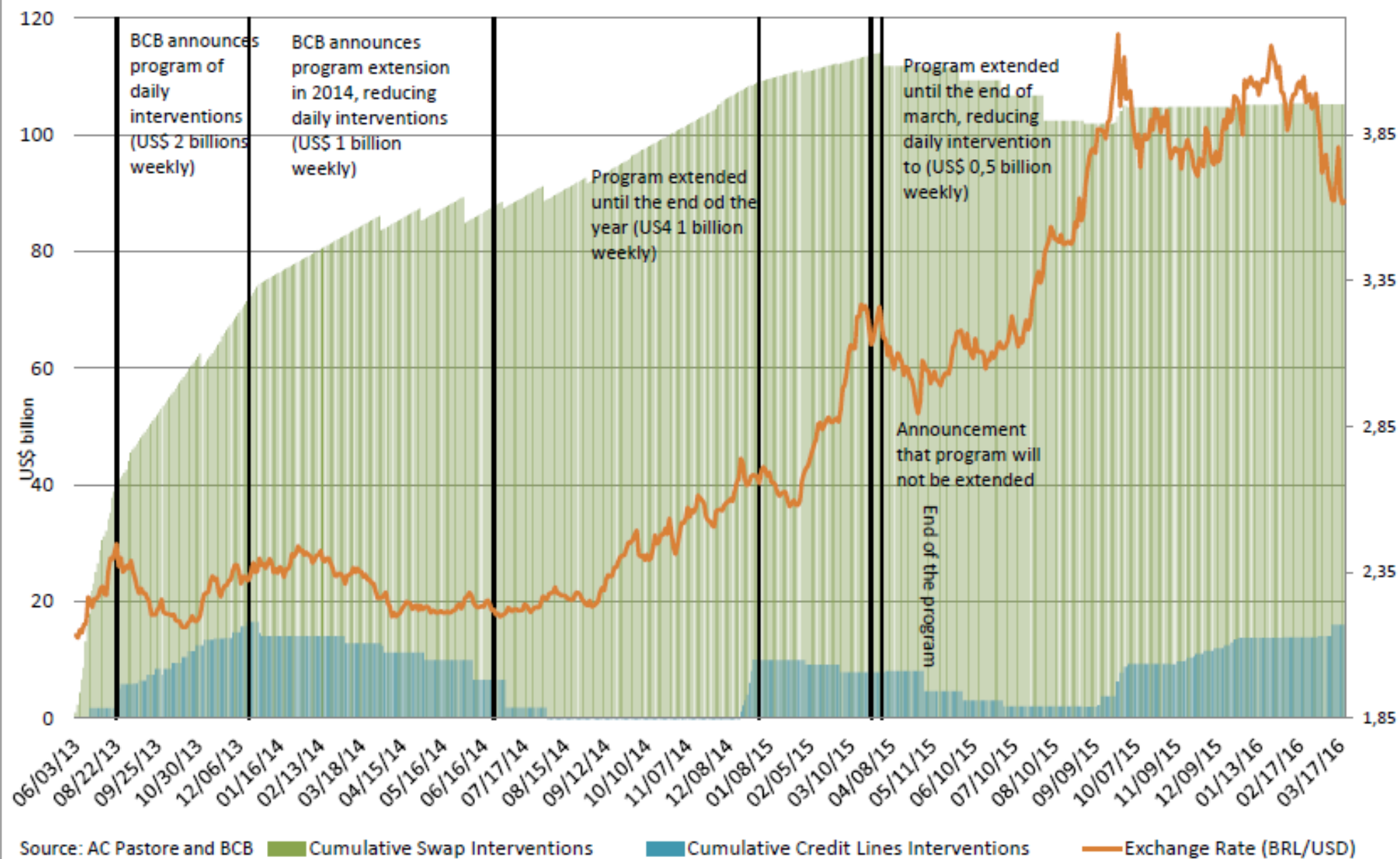
- Brazil has extremely liquid FX derivatives markets, all settled in BRL.
- Most contracts are traded and settled by BM&Fbovespa, and corporations register their FX hedges with banks at CETIP (there are no initial margin requirements nor daily margin calls).
- At least since the late 90s, the Brazilian government has intervened in FX markets using these FX futures, or similar contracts.
- Since the taper tantrum, the BCB has intervened massively selling USD forwards that settle in domestic currency (DNDF).
- The intervention in the derivatives markets is “arbitraged” by banks, thereby linking the futures and the spot FX Market.



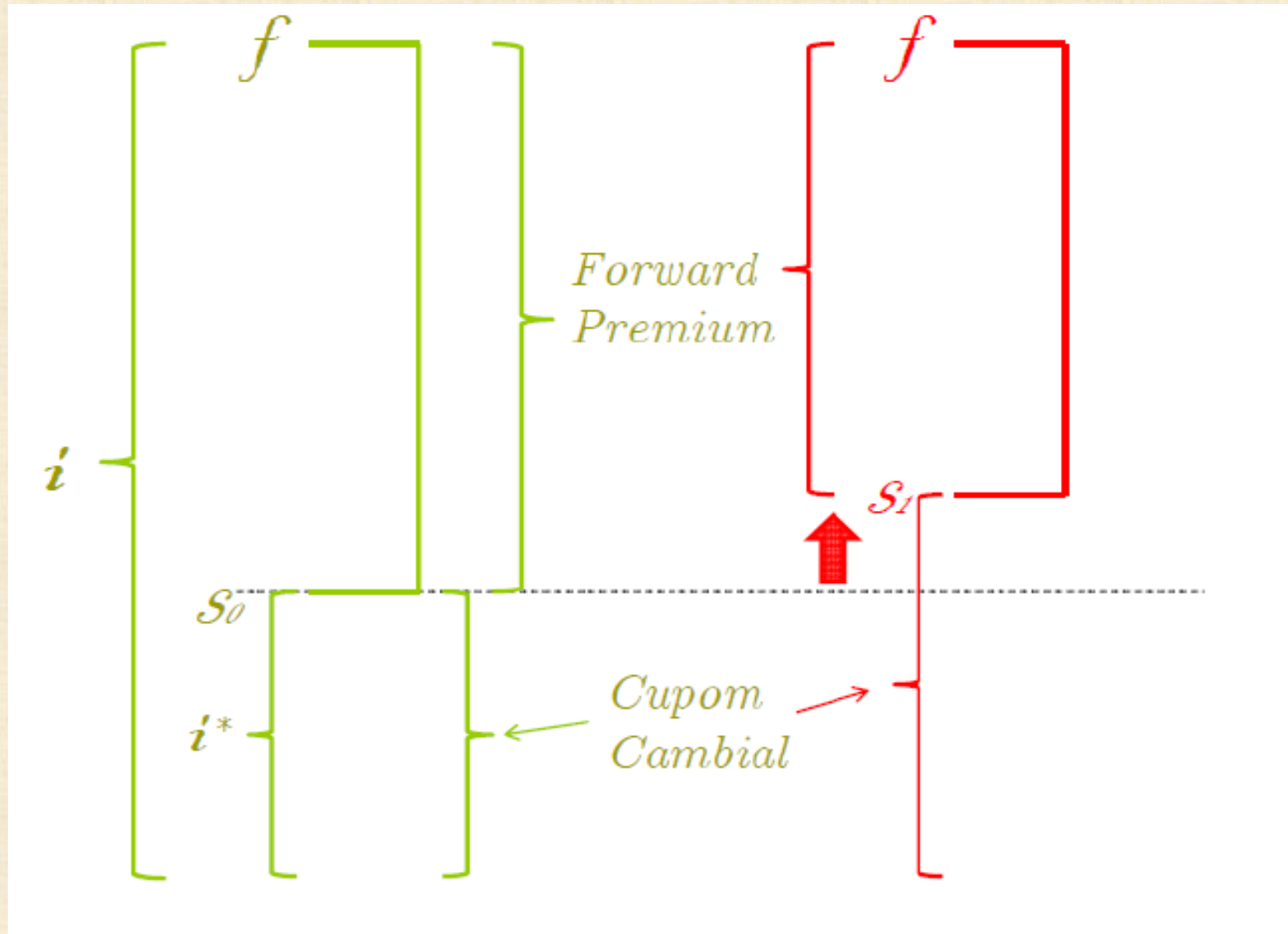


Accumulated Capital Flows and Current Account

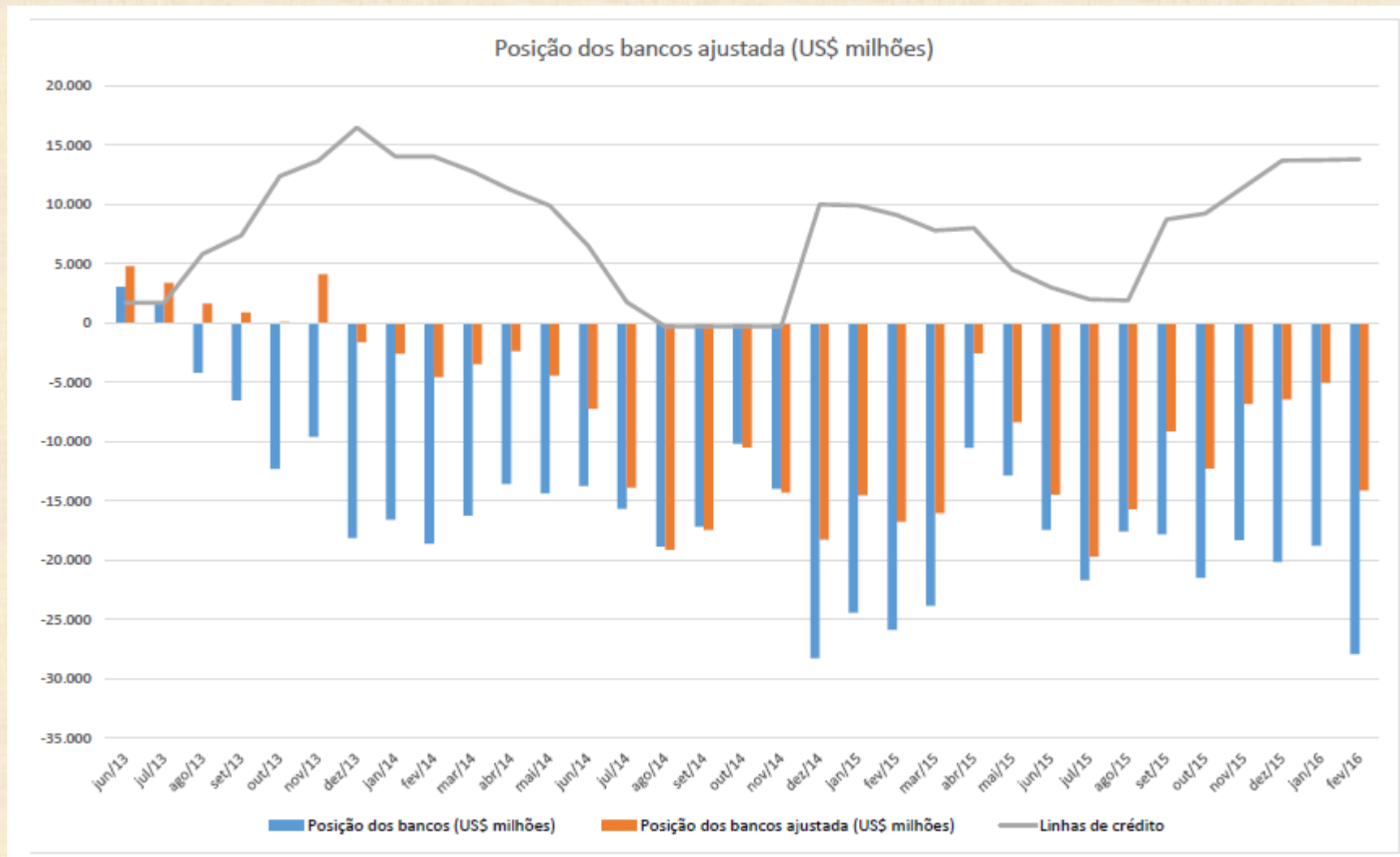




CIP: $f - s = i - i^*$



Futures-Spot FX Connection via Banks



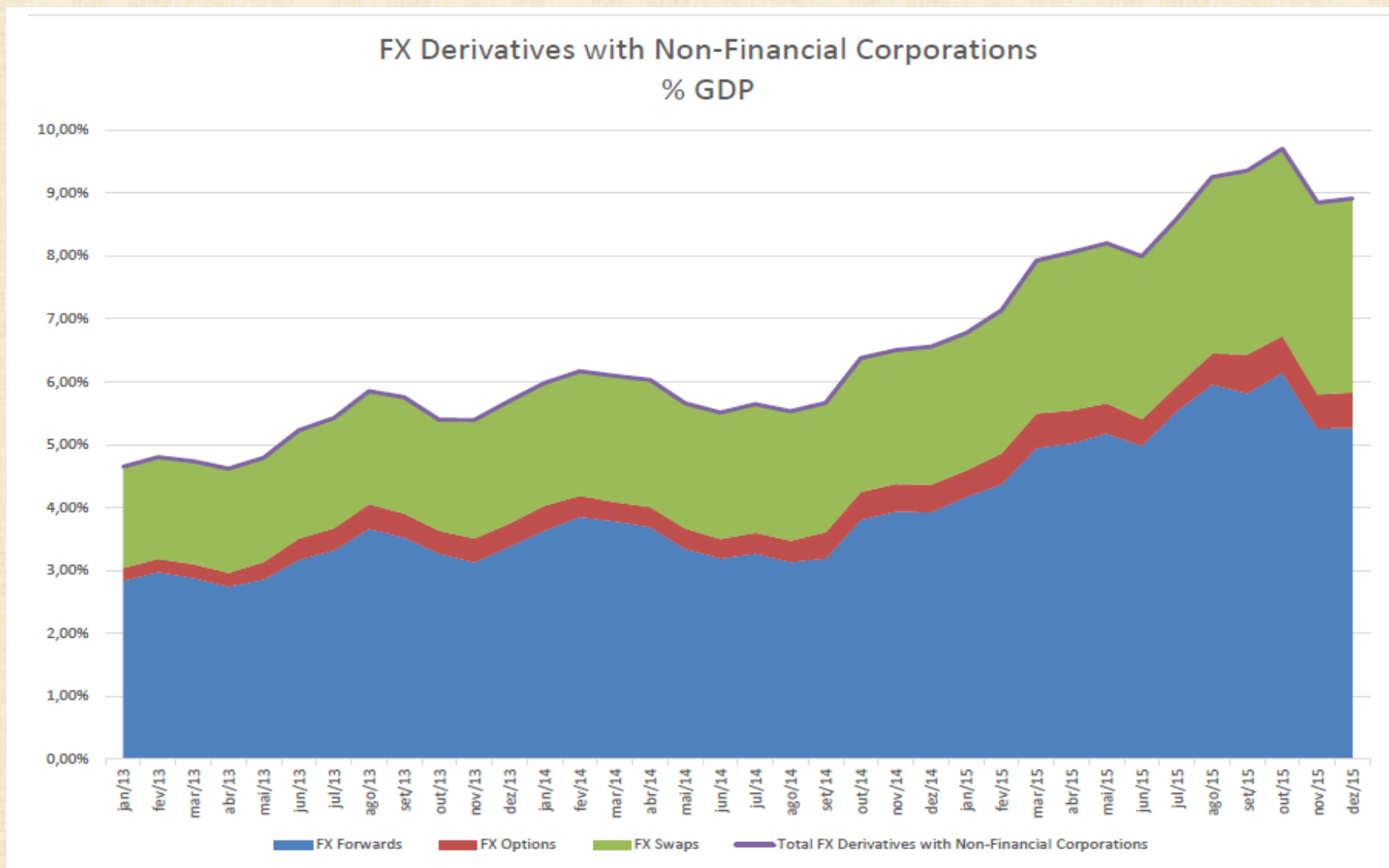
Have they been used to hedge risks?

- The FX hedge sold by the BCB to banks is passed to non-financial agents.
- Estimates computed by the BCB show that 50% of the hedge offered by the BCB goes eventually to non-financial corporations.
- 30% goes to foreign investors.

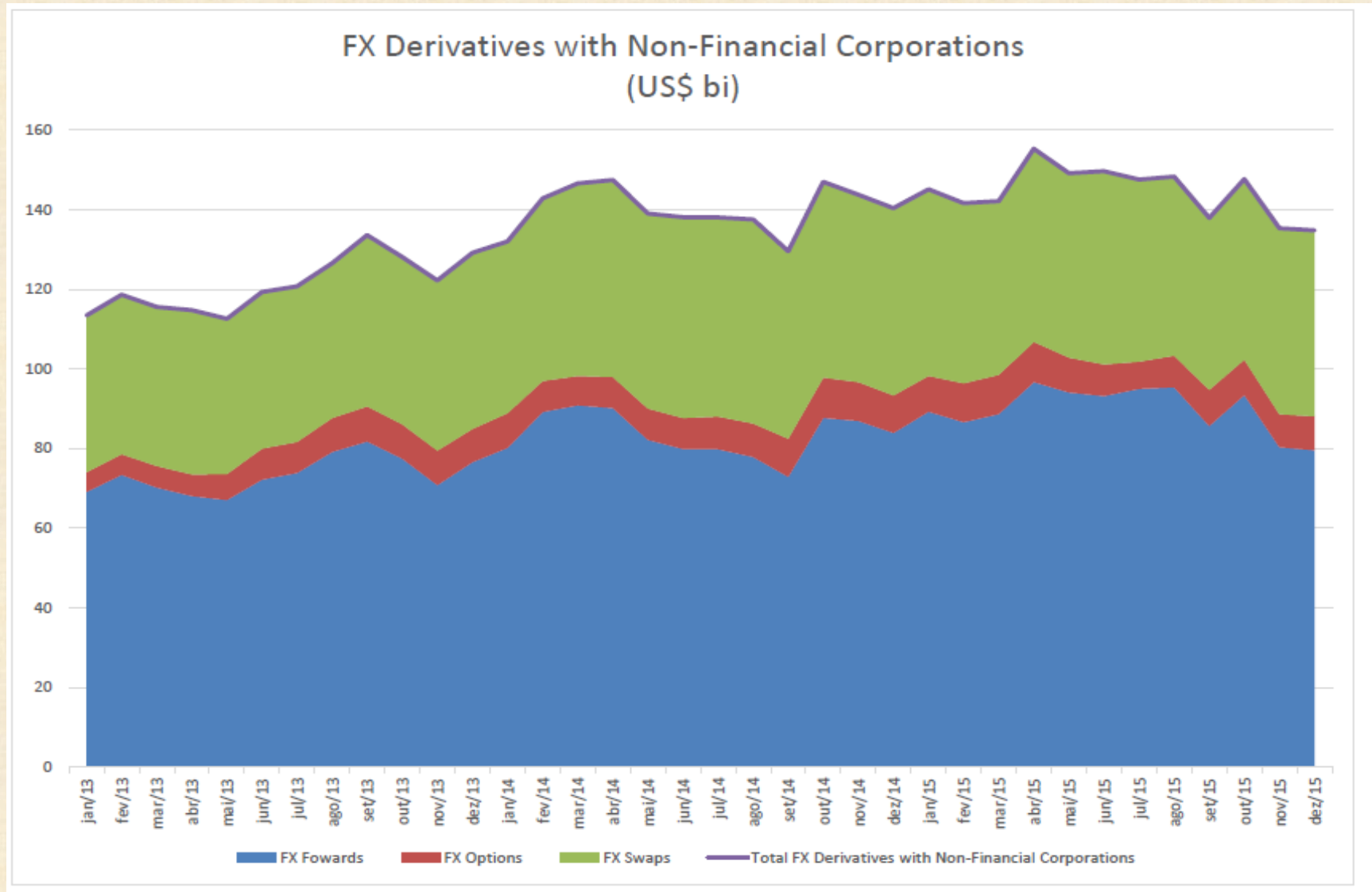
Commercial bank positions in FX derivatives (cumulative, since Taper Tantrum)

	Long USD	Short USD		Residual	Spot position USD	Repo lines	Final residual
(\$mn)	FX swaps	DDI & USD futures	USD forwards	Banks' own position	Bank's spot position	BCB Repo lines	Total banks' position
Jun-13	15,810	-15,256	-4,061	-3,507	-2,345	1,707	-4,145
Jul-13	22,830	-26,273	-6,457	-9,900	-3,732	1,707	-11,926
Aug-13	34,960	-8,570	-13,208	13,182	-9,597	5,817	9,402
Sep-13	43,050	-18,188	-14,373	10,489	-11,919	7,386	5,956
Oct-13	50,641	-14,824	-10,159	25,657	-17,696	12,386	20,347
Nov-13	53,794	-13,580	-5,326	34,887	-14,985	13,686	33,588
Dec-13	58,514	-18,823	-11,072	28,619	-23,532	16,986	22,073
Jan-14	60,997	-25,601	-13,377	22,020	-22,001	14,526	14,545
Feb-14	61,803	-16,892	-16,177	28,734	-24,005	14,526	19,256
Mar-14	62,638	-10,527	-20,828	31,282	-21,662	13,276	22,896
Apr-14	59,670	-16,026	-15,888	27,756	-18,986	11,701	20,471
May-14	60,328	-14,723	-6,102	39,504	-19,750	10,401	30,155
Jun-14	56,424	-9,907	-848	45,669	-19,154	7,001	33,516
Jul-14	54,254	-6,570	-6,238	41,446	-21,050	2,250	22,647
Aug-14	53,050	-3,283	-6,505	43,261	-24,234	200	19,228
Sep-14	55,302	-1,715	-14,327	39,260	-22,571	200	16,889
Oct-14	55,670	-8,917	-29,001	17,752	-15,597	200	2,356
Nov-14	56,202	-9,532	-29,369	17,302	-19,393	200	-1,891
Dec-14	56,806	-97	-47,017	9,692	-33,669	10,500	-13,476
Jan-15	54,452	-5,368	-42,832	6,252	-29,832	10,400	-13,179

Corporate FX Hedge



Corporate FX Hedge



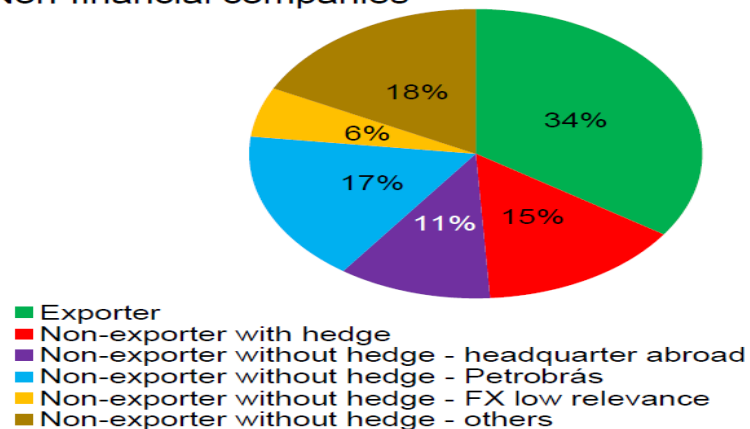
Corporate Debt and FX Hedge

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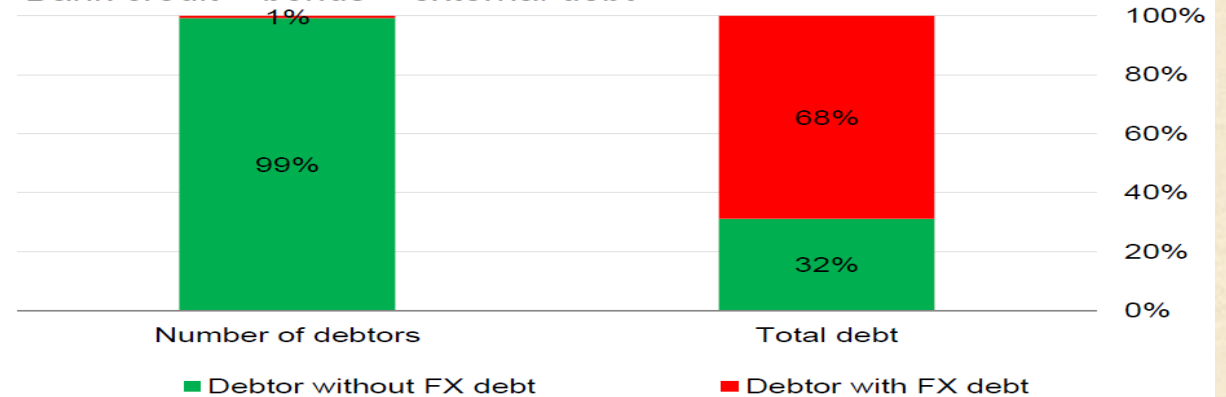
More on Corporate Debt

Debtors exposed to FX are moderately concentrated in a specific sectors, as steel and metals.

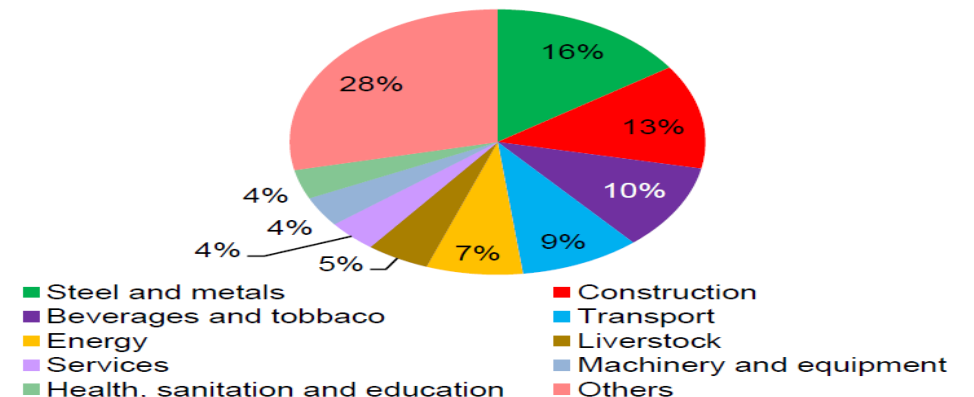
FX debt by type of debtor - Dec/15
Non-financial companies



Share by type of debtor - Dec/15
Bank credit + bonds + external debt



FX Debt by sector - Dec/15
Non-exporter without hedge - others



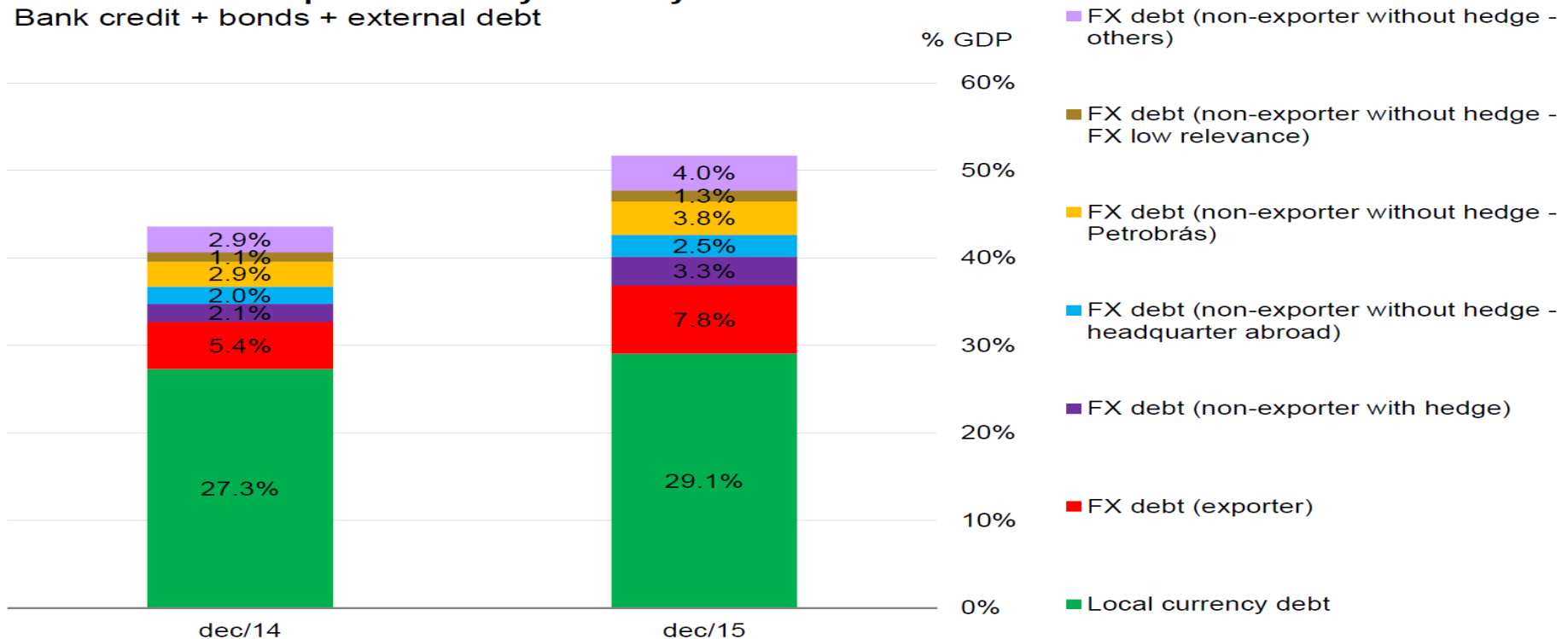
Corporate Debt and FX Hedge

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More on Corporate Debt

FX debt from companies vulnerable to real devaluation stands for 4,0% of GDP. Growth is due to local currency depreciation.

Non-financial companies debt by currency
Bank credit + bonds + external debt



Do regulations limit access to foreign currency financing and balance sheet risks?

- Foreign currency accounts are not allowed in Brazil (CMN and BCB could change that).
- Large corporations access international financial and capital markets.
- FX hedge is extremely expensive in Brazil (domestic interest rates are very high).
- Convertibility risk is traded at foreign NDF markets (On/Off spread).

What are the resulting policy recommendations?

- Brazil: segmented financial market.
- More resilient to crisis, but...
- ... extremely high cost of capital (except gov't subsidized loans)
- Would convertibility help to lower the cost of capital?
- If so, remove article 28 from law 4131, that allows the Executive branch to institute capital controls.
- Lots of bureaucracy to be removed: extremely cumbersome FX contracts, surrender requirements (0% since 2006, but still active), allow banks to offer foreign currency accounts and loans, let banks loan abroad.
- FX hedge provision is a tool to be used only sporadically, not as a long term program, as it happened since 2013.
- Huge interest rate cost of foreign reserves x insurance value.

(Self-centered) References:

- Chamon , M. ; Souza, L. ; Garcia, M. (2015). “FX interventions in Brazil: a synthetic control approach”. Textos para discussão 630, Department of Economics PUC-Rio (Brazil).
- Garcia, M (2009). “Policy Responses to Sudden Stops in Capital Flows: The case of Brazil”. Dealing with na international credit crunch: policy responses to sudden stops in Latin America. Org. Eduardo Cavallo; Alejandro Izquierdo. *Inter-American Development Bank, 2009, p. 189-234.*
- Garcia, Márcio G. P. “The financial system and the Brazilian economy during the great crisis of 2008” / Brazilian Financial and Capital Markets Association. Rio de Janeiro: ANBIMA, 2011. 69 p..
- Garcia, M. ; Volpon, T. (2014). “DNDFs: A more efficient way to intervene in FX markets?” Discussion paper 621, Department of Economics PUC-Rio .
- Janot, M. M. ; Garcia, M. G. P. & Novaes, W. (2008), “Balance sheet effects in currency crises: Evidence from Brazil”, Textos para discussão 556, Department of Economics PUC-Rio (Brazil).
- Vervloet, W. ; Garcia, M. “Incentivo perverso das reservas internacionais: o caso das empresas exportadoras brasileiras”. Revista Brasileira de Comércio Exterior, n. 102, p.67-82, 2010.

